

Manpower Information Systems for Minnesota Dentistry

DAVID O. BORN, PhD

MALDISTRIBUTION OF HEALTH MANPOWER, a major factor in the nation's health care "crisis," is essentially a labor market problem. The basic elements of this market are supplies of health manpower (health professionals) and demands for that manpower (community and employer expressions of need). The crux of all transactions in this marketplace is practice location or employment decision making by health professionals.

A fundamental premise underlying the functioning of such a market under a free enterprise system is that the participants in the market are fully aware of alternative choices and of the consequences of those choices. When this premise is fulfilled, informed decision making oc-

curs, and the market responds appropriately to shifts in supply and demand; effective allocation of manpower resources is the result.

Examination of the health manpower marketplace reveals that professional resources are maldistributed. Even if we allow for great time lags before demands are met, it is apparent that supply and demand are not balancing each other satisfactorily. The emergent social perception of health care as a right simply adds fuel to the fires of unmet economic-based demands.

When the marketplaces fail to function in accordance with economic and social value systems, planners and regulatory agencies have a variety of direct and indirect controls which can be applied. In the case of health manpower, enrollment levels can be escalated on the assumption that "excess" supply will result in spillover which will gravitate to underserved areas. Loan cancellation and tuition rebate programs are also examples of controls which, it is hoped, will result in distribution patterns more in line with perceived needs.

The Indian Health Service and the National Health Service Corps are still other examples of efforts aimed at guaranteeing some measure of health services to specific populations or to particular geographic areas. To date, these efforts have been relatively restricted in scope and, unless major changes are made in funding

□ *Dr. Born is associate professor and director, Dental Information Service Center, Division of Health Ecology, University of Minnesota School of Dentistry. This paper is based on one he presented at the 27th National Conference on Rural Health in Detroit, in April 1974, which was sponsored by the Council on Rural Health, American Medical Association. Research and development described in this report have been supported under Public Health Service grant 1-DO8-PEO1244-01 and contracts NIH 72-4338, NIH 72-4272, and NIH 295-74-0010.*

Tearsheets requests to Dr. David Omar Born, School of Dentistry, University of Minnesota, Minneapolis, Minn. 55455.

and authority, it is unlikely that their impact will be other than highly localized. We can assume, therefore, that in the absence of other major national efforts, the traditional market mechanisms will continue to play a key role in the allocation of professional health manpower.

In looking at the efficiency of the manpower market, one cannot help being struck by the critical role played by information exchange. Expression of needs (demands) must be communicated to the source of supplies if transactions are to occur (1). Current patterns of maldistribution lead one to suspect that perhaps the flow of information into the manpower marketplace is inadequate. If so, one can conclude that individual decision making by health professionals may be based on unsatisfactory information; they may be unaware of all options open to them or they may be uncertain as to the consequences of their choices—and yet the placement or practice location decision is obviously an integral factor in the manpower allocation process.

Investigation reveals, not unexpectedly, that generally the decision maker—upon whom the success of the system depends—does not have sufficient information on which to base his decision. The typical dental graduate, for example, is aware of perhaps one-tenth of the placement options open to him at the State level because he has only a few sources to turn to for information. These sources include fraternity houses, detail men from dental supply firms, and bulletin boards in the dental school—each of which provides a limited amount of information. Thus, the health professional's choice is restricted as a result of his limited access to relevant information. In the absence of comprehensive information, chance rules the marketplace for health manpower.

The Dental Information Service Center

In an effort to systematize information exchange in the dental manpower arena, the Dental Information Service Center (DISC) was conceived as a cooperative function of Minnesota dentistry (2-4). DISC was an attempt to apply the management information systems concept to the health manpower sector. The basic objective is to provide dental manpower administrators with comprehensive, reliable, and up-to-date manpower information and statistical analyses appropriate to the requirements of decision making, policy development, and long-range planning. Further, DISC seeks to fulfill many needs of the State's dental practitioners and auxiliary personnel through the provision of information services.

DISC research. The manpower research function at the Dental Information Service Center has two general responsibilities. The first of these is to conduct a periodic census of dental manpower and to produce general-purpose statistical documents describing the status of dental manpower in Minnesota. The second responsibility is to respond whenever possible to re-

quests for special manpower data and to develop more intensive research into special dental manpower problem areas.

Current research, based on extensive survey activity, includes a number of individual projects that are seeking the answers to the following questions:

1. What is the current delivery capability of Minnesota dentistry—how does this relate to current and projected demand?

2. Which are the economic and geographic trading areas served by Minnesota dentistry?

3. How are dental manpower shortage areas to be identified (5)? Can we effectively differentiate between chronic and acute manpower shortage areas? How can such shortages be resolved (6, 7)?

4. What factors bear most directly on the dentist's decision process concerning location of his practice (8, 9)?

5. What are the general characteristics of the dental auxiliary work force (10)?

6. Are the careers of dental professionals characterized by any age-based trends which must be considered in manpower planning (11)?

The general focus of the research program is to identify the functional components of dental manpower supply and demand, to identify the relationships between the dental manpower sector and the economic and health service sector of the State, and to translate research-derived information into reports and services that can be used by planners, administrators, and providers of health services.

DISC services. DISC provides three services based on a broad data system for use by placement and practice location decision makers. These services are aimed at equalizing manpower distribution; they emerged after it was observed that health professionals were basing their practice location and other important career decisions on extremely limited information. Specifically, dental graduates tended to locate in areas they knew—their hometowns, the Twin Cities, and a few other towns. The students gave little consideration to the vast majority of other Minnesota communities because they knew little or nothing about these communities or the opportunities they offered. Moreover, they were unaware of techniques they might use to inform themselves of the options open to them. DISC's placement services are as follows:

PRACTICE LOCATION SEARCH SERVICE. Comprehensive community profiles on about 300 Minnesota communities have been entered into a computer file. Each community is described by approximately 50 variables, ranging from population size to economic base. A graduating dentist or a dentist wishing to change his practice location can request forms from DISC. In filling out the forms, the dentist lists the characteristics of a location that are most important to him and his family. A computer search then identifies

the communities which meet the dentist's specific criteria and generates a comprehensive descriptive printout of each town. The dentist then can examine each printout before he decides where to locate.

An adjunct function to this service maintains updated files on descriptive materials for communities and counties and lists of community representatives who are important contacts in the decision-making process. All these materials are available to users of the system, and they are encouraged to use them.

OPPORTUNITIES IN DENTAL PRACTICE. Another DISC service is a statewide dental placement clearinghouse for information relating to employment of auxiliary manpower, establishment or purchase of dental practices, and location of other dental employment opportunities. This system, operated on a time-sharing computer network, theoretically permits each user—whether a dentist or an auxiliary—to review all of Minnesota's opportunities before making a decision. For example, the practitioner wishing to sell a practice or to hire an associate can feel confident that the information on his offering will be made available to all prospective candidates. Similarly, for communities wishing to recruit dental manpower, DISC greatly increases the likelihood that their requests will be reviewed by all dentists who are considering establishing practices in the areas with expressed needs.

COMMUNITY LIAISON. Recognizing the complexity of health manpower "recruitment" and the many informational barriers which exist between educational institutions, employers, communities, and health professionals, DISC has also established a community liaison function to open channels of communication and to facilitate the employment and manpower allocation process. This liaison activity is directed toward establishment of the following:

- A service function that will encompass those activities directly related to enhancing communication between health care providers and consumers in need of health manpower;
- A research function that will focus on data collection activities necessary to establish the service function—a primary concern will be the identification of areas where health services are scarce and the determination of realistic solutions to scarcity problems;
- A training function that will provide a formal structure for providing information to students and interested community or employer groups.

Discussion

The efficient production and distribution of dental manpower is essential if optimal levels of dental services are to be available to the public. These manpower responsibilities can be met best if they are undertaken in full awareness of the dynamics of the manpower marketplace. Those dynamics can be properly interpreted only if the marketplace itself is functioning ef-

ficiently. Recent history seems to indicate that the market for health manpower has not been functioning efficiently and that planners and administrators have not always had access to current information which was relevant to their decisions.

In Minnesota, a facility has been established which seeks to monitor dental manpower and to estimate the delivery capability of Minnesota's dental resources in the context of the socioeconomic trade areas they serve in order to determine the location of critical needs. However, it has been recognized that statements of manpower supply and demand are of little value unless there is effective exchange of information to facilitate allocation of dental manpower to areas where needs exist. To this end, Minnesota has also established a placement information clearinghouse which affords health manpower the opportunity to review current, comprehensive data before deciding upon their final placement or practice locations.

Since the implementation of the DISC program, the research and services have been in great demand. One might speculate that if information systems technology had been applied earlier to health manpower planning and placement, today's dental manpower would be distributed in patterns much more in accord with the nation's economic and social value requirements.

Author's note: Under the sponsorship of the University of Minnesota Council of Health Science Deans and Directors, the DISC placement services were recently expanded to serve health professionals in medicine, nursing, pharmacy, occupational and physical therapy, food science and dietetics, and veterinary medicine.

References

1. Jeffers, J., Bognanno, M., and Bartlett, J.: On the demand versus need for medical services and the concept of shortage. *Am J Public Health* 61: 46-63 (1971).
2. Born, D. O.: The Dental Information Service Center. *Northwest Dent* 51: 7-8 (1972).
3. Born, D. O.: The Dental Information Service Center: Services and manpower studies. *Northwest Dent* 52: 246-250 (1973).
4. Born, D. O.: Dental manpower research in Minnesota. *Northwest Dent* 53: 96-101 (1974).
5. Tiede, J., and Born, D.: Delineating dental manpower shortage area. *Minnesota Dental Association*, St. Paul, 1974.
6. Tiede, J., and Born, D.: Professional opinions on the identification of dental manpower shortage areas. *J Am Dent Assoc*: 91: 139-146 (1975).
7. Tiede, J., and Born, D.: The dental manpower shortage area study in Minnesota. *Northwest Dent*: In press.
8. McMillan, W., and Born, D.: The stability of expressed student attitudes toward urban and rural practice. *Northwest Dent* 53: 304-307 (1974).
9. McMillan, W., and Born, D.: Psychological characteristics of dental students with rural and urban practice location preferences. *J Dent Educ*: In press.
10. Folland, S., and Born, D.: Employment, education and selected personal characteristics of Minnesota's dental auxiliaries: An overview. *Northwest Dent*: In press.
11. Folland, S., and Born, D.: Career patterns in Minnesota dentistry: A cross sectional perspective. *The Dental Information Service Center*, University of Minnesota School of Dentistry, Minneapolis, 1975.